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March 6, 2006

Via Federal Express


Office of Electricity Delivery and Energy Reliability, OE-20
Attention: EPACT 1221 Comments
U.S. Department of Energy
Forestall Building, Room 6H-050
1000 Independence Avenue, SW
Washington, DC 20585

Re: Considerations for Transmission Congestion Study
and Designation of National Interest Electric
Transmission Corridors; Notice of Inquiry
Requesting Comment and Providing Notice
of a Technical Conference; 71 FR 5660 (February 2, 2006)

Gentlemen and Ladies:

Enclosed in regard to the above-referenced matter are the original and 10 copies of the Comments and Request of Allegheny Power for Early Designation of National Interest Electric Transmission Corridor. Correspondence or communications with respect to this submission should be addressed to one or more of the individuals identified in Part III of the Comments and Request.

Sincerely,


Randall B. Palmer
Senior Attorney

**UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY
OFFICE OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY**

**Re: Considerations for Transmission Congestion Study
and Designation of National Interest Electric
Transmission Corridors; Notice of Inquiry
Requesting Comment and Providing Notice
of a Technical Conference**

**COMMENTS AND REQUEST OF ALLEGHENY POWER FOR
EARLY DESIGNATION OF
NATIONAL INTEREST ELECTRIC TRANSMISSION CORRIDOR**

Pursuant to the Notice of Inquiry Requesting Comment and Providing Notice of a Technical Conference¹ (NOI) issued by the Department of Energy's Office of Electricity Delivery and Energy Reliability, Allegheny Power² submits these Comments and Request for Early Designation of National Interest Electric Transmission Corridor.

I. Comments on Criteria Development

The NOI identified eight draft preliminary criteria along with identified metrics that the Department proposes to use in evaluating the suitability of a geographic area for designation as a National Interest Electric Transmission Corridor (NIETC). Allegheny Power supports the implementation of these criteria and metrics for the assessment of NIETC proposals provided the Department does not apply these measures of NIETC worthiness in a rigid manner by

¹ 71 FR 5660 (February 2, 2006)

² Allegheny Power is the trade name for Monongahela Power Company, The Potomac Edison Company, and West Penn Power Company. The Allegheny Power companies are public utilities that supply electric energy at retail in parts of Pennsylvania, Virginia, West Virginia and Maryland. All of the Allegheny Power companies own electric transmission facilities subject to the functional control of PJM. Monongahela Power Company owns generation facilities. The Allegheny Power companies are owned and controlled by, and are direct subsidiaries of, Allegheny Energy, Inc., a public utility holding company.

determining that every proposal must meet all eight of the criteria or satisfy all of the metrics for each of the criteria determined to be applicable. For example, a specific proposal may not meet the expectations of both Draft Criterion 1 and Draft Criterion 2. Draft Criterion 1 relates to action needed to maintain high reliability and Draft Criterion 2 relates to action needed to achieve economic benefits for consumers. Although these criteria are not mutually exclusive, not all proposals requiring NIETC designation will necessarily fulfill both. A proposal may justify NIETC designation solely for reliability reasons but will provide minimal or no economic benefits. The failure to meet both requirements should not prevent NIETC designation.

A close examination of the draft criteria suggests that it should be sufficient for NIETC designation if a proposal substantially meets any one of the first six criteria and its associated metrics with Draft Criteria 7 and 8 used as factors in evaluating the merits of the proposal. For example, a project may meet the economic benefits test of Draft Criterion 2 but the need for the project may be encumbered with unduly contingent uncertainties associated with analytic assumptions as described in Draft Criteria 7. In other words, the project may show economic benefits many years into the future but is fraught with the uncertainties of the assumptions inherent in the analysis that, on balance, the project should not warrant NIETC designation when other proposals demonstrate more pressing and certain needs or benefits.

In short, Allegheny Power believes the criteria have been correctly identified in the NOI. However, the Department's method for applying the criteria is as important as the criteria themselves. Allegheny Power urges the Department to apply the criteria and associated metrics in a flexible and non-exclusive manner that permits NIETC designations that meet any of one of the first six criteria and allows for evaluation of the proposal in the context of one or more of those criteria under the seventh and eighth criteria.

II. Request for Early Designation of National Interest Electric Transmission Corridor

The NOI invited parties to identify areas that they believe merit designation as an NIETC, and to explain why early designation is necessary and appropriate. The NOI stated that the Department will consider for early designation as NIETCs only those proposed corridors for which a particularly compelling case is made that early designation is both necessary and appropriate, and for which data and information are submitted strongly supporting such a designation.

Pursuant to the invitation extended by the NOI, Allegheny Power requests the Department to assign an early designation as NIETC to the corridor necessary for the construction of the Trans-Allegheny Interstate Line (TrAIL) Project. As a transmission-owning member of PJM Interconnection, L.L.C. (PJM), Allegheny Power submitted its proposal for the TrAIL Project to PJM on March 1, 2006 for inclusion in PJM's next iteration of its Regional Transmission Expansion Plan. (Project details are set forth in Attachment A, which is a copy of the TrAIL Project proposal as submitted to PJM.)

The area for which Allegheny Power seeks early designation as NIETC for the TrAIL Project is shown on Attachment B and highlighted in yellow. The proposed TrAIL Corridor will extend from the West Virginia western panhandle area, through the southwestern Pennsylvania-Northern West Virginia area, along the eastern West Virginia panhandle and western Maryland area, to the central Maryland area. As shown on Attachment B, the TrAIL Corridor will include several existing transmission facilities, including:³

- Wylie Ridge 500/345 kV Substation
- Kammer 765/500 kV Substation
- Fort Martin – Pruntytown 500 kV Line
- Pruntytown – Mt. Storm 500 kV Line
- Mt. Storm – Doubs 500 kV Line
- Black Oak – Bedington 500 kV Line
- Doubs 500/230 kV Substation

³ Allegheny Power owns all or portions of these facilities.

The TrAIL Project will:

- Enhance the reliability of the PJM Transmission System,
- Provide economic benefits to consumers,
- Ease congestion on the PJM Transmission System,
- Diversify available generation sources,
- Strengthen the energy independence of the PJM Energy Market and the markets of adjacent RTOs, and
- Further national energy policy.

A. Reliability Enhancement

The TrAIL Project will enhance the reliability of the PJM Transmission System by adding an additional EHV⁴ transmission line across the AP Zone⁵ and lessen reductions in west-to-east transfers and re-dispatching of generation during single contingency events. During 2005, PJM issued approximately 350 load-dump warnings for the AP Zone. Allegheny Power estimates that TrAIL will reduce this number by approximately 30%. In the same year, PJM called for about 480 TLRs (Transmission Load Relief Orders) in the AP Zone, with more than 50 of these related to EHV facilities. Allegheny Power estimates that TrAIL will eliminate most of the EHV- related TLRs within the AP Zone. In addition, there has been an increase in generation retirement announcements in the mid-Atlantic area of the PJM Region.⁶ By increasing the available transmission transfer capacity through the construction of TrAIL, Allegheny Power will contribute significantly to alleviating many of the reliability concerns associated with potential generation retirements in the PJM Region.

⁴ Allegheny Power refers to EHV as “Extra High Voltage” and as voltages at 345 kV and above.

⁵ The AP Zone is identified in Attachment J of the PJM Open Access Transmission Tariff as the “APS Zone.”

⁶ 2004 *State of the Markets Report* issued by the Federal Energy Regulatory Commission, June 2005, Docket MO05-4-000, page 110.

B. Economic Benefits

The TrAIL Project will improve the economic vitality and development of markets within the PJM Region. The proposed line will provide the high-cost electric energy markets in the eastern PJM Region with access to lower-cost generation in the Midwest by increasing the west-to-east transfer capacity of the PJM Transmission System. TrAIL will allow generation to be dispatched to minimize electric energy costs across the corridor and into the electric energy market of the eastern PJM Region. This aspect of TrAIL is of particular importance because PJM has been unable to timely implement market devices that mitigate the high-cost of electric energy in this portion of the PJM Region, and merchant generation has not stepped forward to construct generation plants to alleviate high prices.

Results of load flow analyses performed by Allegheny Power using PJM's 2010 Summer RTEP (50/50) load flow model are summarized in Table 1 below. These results demonstrate that TrAIL will increase the west-to-east total transfer capability of the PJM Transmission System by 3800 MW over base case levels and supports the conclusion that TrAIL will provide economic benefits to consumers within the PJM Region, especially those in the high-cost electric energy markets in the eastern portion of the region.

Table 1

System Configuration	Limit Type	FCITC (MW)	Limiting Constraint	Contingency	Incremental Transfer Capability (MW)
Base Case	Voltage	400	Meadow Brook 500kV bus voltage	Black Oak-Bedington 500kV Line	-
Base Case	Thermal Loading	600	Black Oak-Bedington 500kV Line	Pruntytown-Mt. Storm 500kV Line	-
Base Case	Thermal Loading	1450	Mt. Storm - Doubs 500 kV Line	Greenland Gap - Meadow Brook 500 kV Line	
TrAIL Project	Thermal Loading	4200	Lexington-Dooms 500kV Line	Bath Co-Valley 500kV Line	3800
TrAIL Project	Thermal Loading	5200	Pruntytown - Mt. Storm 500 kV Line	502 Station - Mt. Storm 500 kV Line	4800

C. Congestion Reduction

As part of the economic planning component of its Regional Transmission Expansion Plan (RTEP), PJM has been monitoring and posting to its website the gross congestion costs associated with each individual transmission constraint in the PJM Region since August 1, 2003.⁷ For those individual transmission constraints in which the gross congestion costs exceed predefined thresholds, PJM then calculates the unhedgeable congestion costs associated with those constraints.⁸ PJM defines unhedgeable congestion as costs that cannot be hedged by the use of Financial Transmission Rights (FTRs) or other hedging instruments pursuant to the PJM Tariff or the Operating Agreement. Unhedgeable congestion costs are also posted on the PJM website.⁹

The existing transmission facilities in the TrAIL Corridor listed above account for a significant amount of the gross and unhedgeable congestion in PJM, as these facilities provide a primary transmission path within the PJM Region for electric energy from sources in the Midwest and the western portions of the PJM Region to loads in the eastern portion of the PJM Region.¹⁰ Total congestion costs in PJM during 2004 were 9% of total billings, which totaled \$808 million.¹¹ One of the facilities located in the TrAIL Corridor contributing to the congestion is the Bedington-Black Oak 500 kV Line. This line was constrained for 1,131 hours during 2004 and 54 percent of the line's congestion occurred during on-peak hours. This constraint increased the average LMP on the average affected load of 39,170 MW by \$12 or 20%.¹² The Bedington-Black Oak Line was the most frequently constrained facility on the PJM system throughout

⁷ Gross and Unhedgeable congestion costs were calculated from the "2003-04-05-monthly-congestion-summary.xls" file located on the PJM website (www.PJM.com/planning/economic-planning/).

⁸ *Id.*

⁹ *Id.*

¹⁰ *2004 State of the Market*, issued by PJM's Market Monitoring Unit, March 8, 2005, page 218

¹¹ *Id.*, footnote 11, page 37

¹² *Id.*, footnote 11, page 59

2004.¹³ In 2005, the total gross congestion costs associated with facilities in the TrAIL Corridor accounted for \$3.7 billion, or nearly two-thirds, of the total \$5.6 billion accumulated in PJM.¹⁴ These facilities have accounted for \$4.8 billion of gross congestion, or 60% of the total in PJM, and nearly \$150 million of unhedgeable congestion, or nearly one-third of the total in PJM, between August 1, 2003 and January 31, 2006. Along with plans currently underway to increase transformer capacity of the three substations in the TrAIL Corridor, construction of the TrAIL Project is expected to significantly reduce congestion by relieving loading on the four-500 kV lines in the TrAIL Corridor. Table 2 below lists the impact of the TrAIL Project on these 500 kV lines.

Table 2

Congestion Area	4-Hour Rating	Line Loading (% 4-Hour Rating)		Contingency
		2010 RTEP	With Trans-Allegheny Interstate Line	
Black Oak - Bedington 500 kV	2744	97.9	70.9	Pruntytown - Mt. Storm 500 kV
Mt. Storm - Doubs 500 kV	2598	94.1	76.1	Mt. Storm - Greenland Gap 500 kV
Mt. Storm - Doubs 500 kV	2598	94.1	76.1	Greenland Gap - Meadow Brook 500 kV
Mt. Storm - Doubs 500 kV	2598	92.0	72.0	Black Oak - Bedington 500 kV
Fort Martin - Pruntytown 500 kV	2434	87.1	67.7	Harrison - Pruntytown 500 kV
Pruntytown - Mt. Storm 500 kV	3326	89.8	67.5	Black Oak - Bedington 500 kV

D. Increase Generation Diversity

The TrAIL Project will provide loads in the eastern portion of the PJM Region with access to a larger, more diverse, lower cost sources of generation. This will allow generation to be dispatched to minimize the electric energy costs. Also, the corridor will provide better access to these loads for new wind and coal-fired generation facilities being developed in areas along and adjacent to the proposed corridor.

¹³ *Id.*, footnote 11, page 218

¹⁴ Gross and Unhedgeable congestion costs were calculated from the “2003-04-05-monthly-congestion-summary.xls” file located on PJM web site (www.PJM.com/planning/economic-planning/).

E. Strengthen Energy Independence

Construction of the TrAIL Project will reduce the dependence of loads in the mid-Atlantic area on imported oil and liquefied natural gas by providing reliable lower-cost sources of energy from the western PJM Region and the Midwest. In short, the TrAIL Project strengthens the energy independence of the United States.

F. Further National Energy Policy

Congress and the Federal Energy Regulatory Commission have identified the need for capital investment in the national transmission infrastructure.¹⁵ Additionally, the Department has concluded that the electric system in the United States is in need of substantial capital investment to meet the future needs of the Information Economy.¹⁶

The TrAIL Project will be a significant capital investment in the national transmission infrastructure that will enhance the reliability of the PJM Transmission System and provide energy cost reducing benefits to consumers in the mid-Atlantic areas within the PJM Region.

G. The TrAIL Project Merits Early Designation as an NIETC

Based on the foregoing and the project details set forth in Attachment A, an early designation as an NIETC is both necessary and appropriate for the TrAIL Project. A compelling need exists for the designation so that Allegheny Power and PJM can begin to bring about the reliability enhancement, economic, congestion relief, generation diversity, energy independence and furtherance of national energy policy benefits offered by the TrAIL Project. Allegheny Power requests the Department to provide an early NIETC designation to the corridor needed for the TrAIL Project.

¹⁵ *Energy Policy Act of 2005*, Sections 1241 and 1242; *Promoting Transmission Investment through Pricing Reform*, 113 FERC ¶ 61,182 (November 18, 2005)

¹⁶ “*GRID 2030*” *A National Vision for Electricity’s Second 100 Years*, issued by United States Department of Energy – Office of Electric Transmission and Distribution, July 2003, page iii

III. Correspondence and Communications

Correspondence or communications with respect to these comments and request should be addressed to the following:

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Respectfully submitted,

Allegheny Power

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Attorneys for Allegheny Power

Dated at Greensburg, PA this 6th day of March 2006.

Attachment A

The Trans-Allegheny Interstate Line Project

A 500 kV Transmission Line Through the AP Zone



February 28, 2006

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I. Executive Summary

In May 2005, PJM Interconnection L.L.C. (PJM) unveiled the Project Mountaineer concept. As conceived, Project Mountaineer would consist of one or more transmission system reinforcement projects to enhance the west-to-east transfer capability of the entire PJM Transmission System. PJM envisioned its independent planning process, known as the Regional Transmission Expansion Planning Protocol, as the vehicle for identifying a comprehensive plan for Project Mountaineer.

Following PJM's announcement of Project Mountaineer, Allegheny Power¹ (AP), a transmission owner within the PJM Region, began reviewing various transmission system enhancement opportunities within the AP Zone² that would provide significant increases in west-to-east transfer capability within the entire PJM Region and could be incorporated into PJM's Regional Transmission Expansion Plan (RTEP). The Trans-Allegheny Interstate Line Project³ described in this Proposal meets those requirements and will improve reliability.⁴ The Project is an effective solution for addressing long-term reliability issues in the PJM Region and should be included in the RTEP as a part of a major expansion of the PJM Transmission System. In addition to improving reliability, the Project will increase west-to-east transfer capability throughout the entire PJM Region and is expected to improve market efficiency by reducing congestion.

The Trans-Allegheny Interstate Line will span about 330 miles, all within the AP Zone, and consist of a 500 kV line stretching from AP's existing Wylie Ridge Substation in the western panhandle of West Virginia near Weirton on the western side of the AP Zone to a new substation near Kempton, Maryland on the eastern side of the AP Zone in Frederick County, Maryland. The Project will make effective use of existing facilities and rights-of-way. Initial engineering and planning will begin in 2007 with the first phase of the Project placed in service during 2013. The Project is expected to cost approximately \$1.4 billion.

AP requests that PJM incorporate the Project into the next RTEP. AP understands that the PJM Board of Managers is expected to approve the next RTEP in June 2006. Once included in the approved RTEP, AP will initiate the process of obtaining state authorizations to build the Project. In addition, concurrently with the submission of this Proposal to PJM, AP is submitting to the Federal Energy Regulatory Commission (FERC) a request for authorization of certain incentive rate treatments. In addition, AP

¹ Allegheny Power is the trade name for Monongahela Power Company, The Potomac Edison Company and West Penn Power Company.

² The transmission zones of PJM are shown in Attachment J of the PJM Open Access Transmission Tariff. The AP Zone is identified in Attachment J as the "APS Zone."

³ The Trans-Allegheny Interstate Line Project will be constructed by one or more of the three AP operating companies, a subsidiary of one or more of the AP operating companies, or a subsidiary of Allegheny Energy, Inc., the parent of the AP operating companies.

⁴ For the purposes of this Proposal, the term "improve reliability" is defined as meeting or exceeding the reliability criteria of the North American Electric Reliability Council, ReliabilityFirst, PJM and AP.

expects to request the U.S. Department of Energy to designate the Project as a National Interest Electric Transmission Corridor in a filing to be made on or about March 6, 2006.

The primary advantages of the Trans-Allegheny Interstate Line Project are:

- ◆ The Project will significantly strengthen the existing PJM Transmission System infrastructure;
- ◆ Construction will be completed in phases, yielding incremental benefits as each phase is completed and placed in service;
- ◆ Existing facilities and rights-of-way will be used where feasible;
- ◆ Loading on several highly congested facilities will be reduced;
- ◆ Voltage and thermal limitations will be relieved;
- ◆ West-to-east transfer capability will be increased; and
- ◆ The Project is viable either on a stand-alone basis or as a complement to other possible transmission enhancement proposals.

Based on numerous studies, AP identified the Trans-Allegheny Interstate Line Project as the most effective realization of the Project Mountaineer concept. The line will be constructed from the existing Wylie Ridge Substation to the proposed Prexy Substation in southwestern Pennsylvania, and continue to the proposed 502 Junction Substation in Greene County, Pennsylvania along the Kammer-Fort Martin-Harrison Line. From 502 Junction, the line will continue to the existing Mt. Storm Substation in Grant County, West Virginia.⁵ The next segment of the Trans-Allegheny Interstate Line Project will continue to traverse West Virginia to the existing Bedington Substation in Berkeley County, West Virginia with the final segment extending to the new Kemptown Substation in Frederick County, Maryland. The Project will also include the installation of a Static VAR Compensator (SVC) of approximately +500 MVAR at AP's Meadow Brook Substation south of Winchester, Virginia. The location of the Trans-Allegheny Interstate Line Project is shown on the map on page 5 of this Proposal.

This Proposal is supported by load flow analyses that used PJM's 2010 Summer RTEP (50/50) load flow model. Based on these analyses, the Trans-Allegheny Interstate Line will increase the west-to-east total transfer capability of the PJM Transmission System by 3800 MW over base case levels. The Project will be routed through developing load centers and areas of potential generation retirement to allow not only increased system transfers but also provide for local area reinforcement. AP estimates that construction of the Trans-Allegheny Interstate Line Project can be completed over a seven-year period with the entire Project in-service during 2013. However, construction will occur in phases with separate line segments placed in service when completed in order to begin to provide benefits to the entire PJM Region.

⁵ Virginia Electric and Power Company owns the Mt. Storm Substation, and AP owns transmission equipment within the substation.

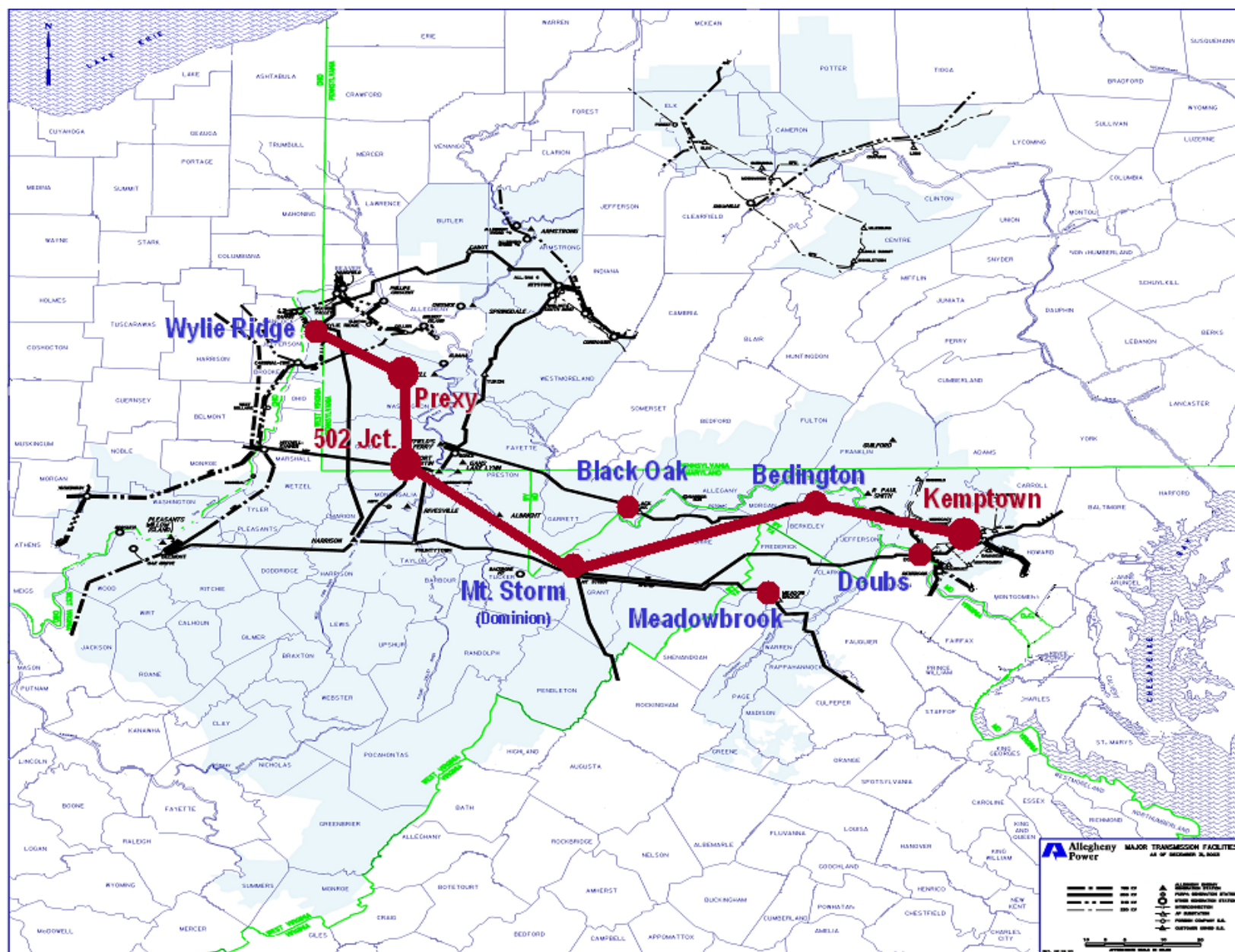


Supplementary analyses indicate that the Project performed comparably to the recently proposed AEP Interstate Project⁶ when tested under system conditions and outage contingencies in the studies underlying this Proposal. If both the Trans-Allegheny Interstate Line Project and the AEP Interstate Project were to be constructed, AP's analysis indicates the total west-to-east transfer capability of the PJM Transmission System would significantly enhance power flows above the 5000 MW level stated by PJM.⁷

Based on these various studies and analyses, AP submits this Proposal to PJM for inclusion of the Trans-Allegheny Interstate Line Project in the next RTEP as a solution to anticipated reliability criteria violations resulting from PJM's 15-year planning study. AP looks forward to working closely with PJM in the development and implementation of the Trans-Allegheny Interstate Line Project.

⁶ "The AEP Interstate Project Proposal – A 765 kV Transmission Line From West Virginia to New Jersey" prepared by American Electric Power Corporation and dated January 31, 2006.

⁷ Testimony of Karl Pfirrmann, President, PJM Western Region, at FERC Technical Conference on May 13, 2005



II. Background

A. Overview of AP's Existing Transmission Facilities

The three AP operating companies that conduct business as “Allegheny Power” are Monongahela Power Company, The Potomac Edison Company and West Penn Power Company. All three are subsidiaries of Allegheny Energy, Inc., headquartered in Greensburg, Pennsylvania. The AP operating companies provide retail electric service to approximately three million people in Maryland, Pennsylvania, Virginia, and West Virginia. AP's transmission facilities subject to the functional control of PJM consist of approximately 4,600 circuit-miles of transmission lines. These lines operate with nominal operating voltages of 115 kV, 138 kV, 230 kV, 345 kV and 500 kV. Shown below in Figure 1 is the AP Zone within the PJM Region.

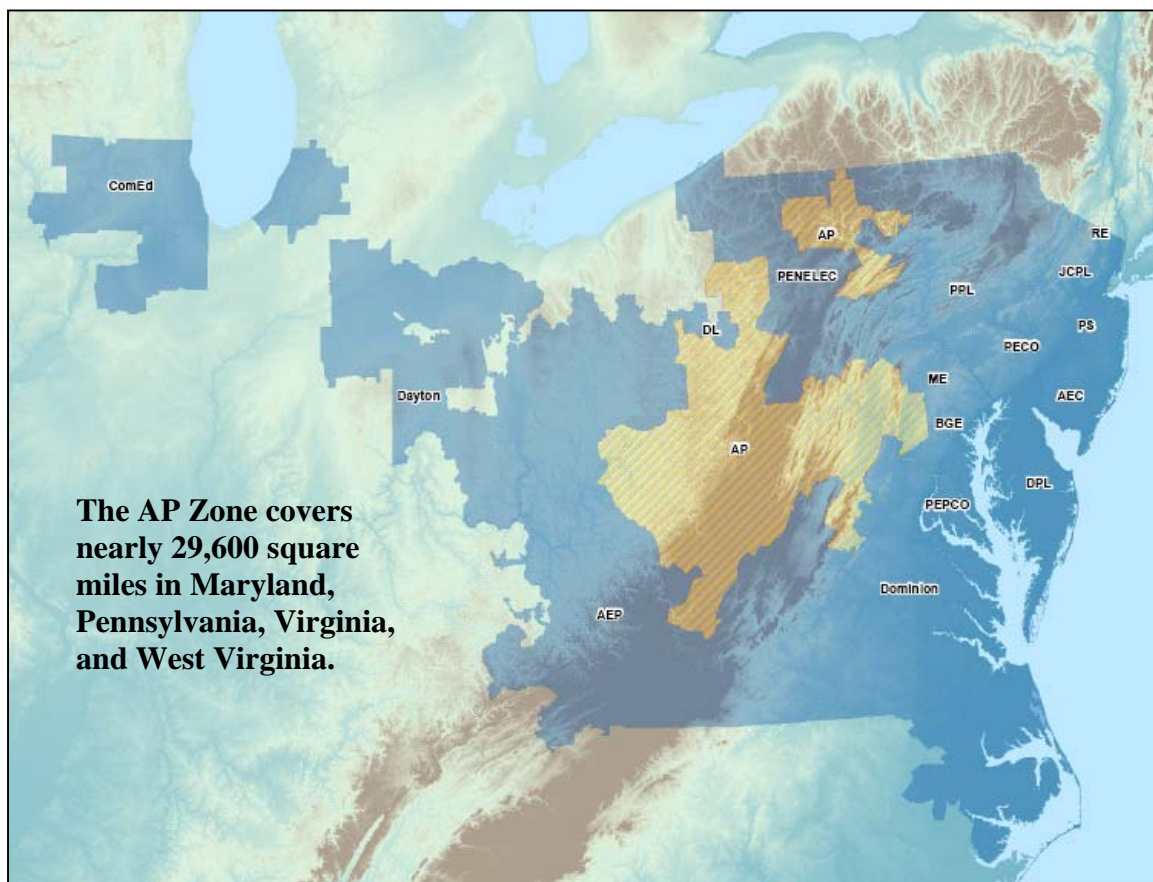


Figure 1 - AP Zone



The AP transmission facilities are interconnected through 48 tie lines to the transmission facilities of five neighboring transmission owners. These include 15 ties to the operating companies of American Electric Power Corporation, four ties to Duquesne Light Company, 19 ties to FirstEnergy Corporation, three ties to Potomac Electric Power Company, and seven ties to Dominion Virginia Power.

Because of the location of the AP Zone, AP's transmission facilities are integral to many of the west-to-east transfers within the PJM Region. With the integration of AP, AEP, Commonwealth Edison, Dayton Power and Light, and Duquesne Light into PJM, west-to-east transfers have increased significantly.⁸ These transfers have caused constraints, thermal overloads, and low voltage problems throughout the AP Zone under numerous heavy transfer and contingency scenarios. In addition to these reliability issues, these increased transfers resulting from the movement of lower-cost generation from the west to the load centers in the east have caused congestion issues, many of which have been identified by PJM as attributable to constraints within the AP Zone.

B. Development of the Trans-Allegheny Interstate Line Project

At a FERC Technical Conference held on May 13, 2005, Karl Pfirrmann, President, PJM Western Region, proposed Project Mountaineer. As conceived, Project Mountaineer would consist of one or more transmission system reinforcement projects to provide the eastern PJM load centers, where energy costs are higher, with access to the lower cost coal-fired generation in the western PJM Region and the footprint of the Midwest Independent Transmission System Operator. This can be achieved by increasing the west-to-east system transfer capacity of the PJM Transmission System.

On a conceptual basis, Project Mountaineer consisted of four possible transmission corridors extending west to east across the PJM Region. Three of the corridors were located in the AP Zone. As a result, during the summer of 2005, AP began an evaluation process to study, determine increases in system transfer capacity and evaluate the impact of the new facilities in its transmission zone.

AP used a linear First Contingency Incremental Transfer Capability (FCITC) analysis to identify and screen facilities needed to increase the west-to-east transfer capability along the three proposed transmission corridors that crossed the AP Zone. Approximately 12 to 15 lines or line combinations were identified and evaluated as well as a number of transformer capacity upgrades.

⁸ Id.



More detailed FCITC and Power-Voltage (PV) analyses narrowed the potential line combinations to the route described in this Proposal. This study assessed the performance of this line route as providing an effective realization of the Project Mountaineer concept while focusing on existing congestion areas, underlying system support, and voltage and thermal improvements.

III. Analysis

The analyses conducted for the study underlying this Proposal were based on PJM's 2010 Summer RTEP (50/50) load flow model. To this model, the following facility additions were added:

- ◆ Two additional 500/345 kV transformer banks at the Wylie Ridge Substation;
- ◆ The replacement of the existing 1500 MVA 765/500 kV transformer at the Kammer Substation with upgraded capacity;
- ◆ A +525/-100 MVAR SVC at the Black Oak Substation; and
- ◆ The reconductoring of the two Doubs-Dickerson 230 kV Lines.

As part of the RTEP process, AP is currently working on all of these projects.

AP chose 500 kV as the operating voltage since all of the stations along the three transmission corridors contain 500 kV facilities. However, AP modeled the lines assuming 765 kV line construction to allow for future conversion as dictated by system needs. When constructing the Trans-Allegheny Interstate Line, AP would use 765 kV construction standards if directed by PJM. Right-of-way width for this construction was assumed to be 200 feet, which is AP's current standard for 500 kV construction and is adequate for 765 kV construction. Upgrading operation to 765 kV at a later date would entail addition of the proper transformations and associated equipment.

The results from the base case analyses with the upgrades listed above provided a voltage limited incremental transfer capability of 400 MW, with the 500 kV bus voltage at Meadow Brook being the limit on this transfer for the outage of the Black Oak-Bedington 500 kV Line.

The results of the analyses of the Wylie Ridge - Prexy - 502 Junction - Mt. Storm - Bedington - Kemptown 500 kV line and Meadow Brook SVC provide an incremental transfer increase above the voltage limited base of up to 3800 MW of additional transfer capacity upon the completion of the entire Project.

As a comparison, supplementary analyses indicate that the Project's system reinforcement performed comparably to the AEP Interstate Project reinforcements when tested under system conditions and outage contingencies in the AP study. If both the AP and the AEP projects are constructed, the total transfer capability would significantly enhance power flows above 5000 MW. With the construction of other transmission system reinforcements within the PJM Region other than those contemplated by this Proposal and the AEP Interstate Project Proposal outside of the AP Zone, greater increases in total transfer capability could be realized.



AP proposes to construct the Project in the following three distinct phases that will be constructed concurrently:

Phase I - Construct 502 Junction to Mt. Storm to Bedington and install SVC at Meadow Brook

Results of the Phase I facility additions provide an incremental transfer above the base of 1300 MW. The transfer limit after Phase I construction will be the thermal rating of the Bedington–Doubs 500 kV Line for the outage of the Mt. Storm-Doubs 500kV Line.

Phase II - Construct Bedington to Kemptown

Results of the Phase II facility additions provide an incremental transfer above the base of 3750 MW. The transfer limit after Phase II construction will be the thermal rating of the Lexington-Dooms 500kV Line for the outage of the Bath County-Valley 500kV Line.

Phase III - Construct Wylie Ridge to Prexy to 502 Junction

Results of the Phase III facility additions provide an incremental transfer above the base of 3800 MW. The transfer limit after Phase III construction will be the thermal rating of the Lexington-Dooms 500kV Line for the outage of the Bath County-Valley 500kV Line.

A detailed discussion of the implementation of these three construction phases is provided in Section VI, Part B.



The results of the analyses performed for this Proposal are summarized in Table 1 below.

System Configuration	Limit Type	FCITC (MW)	Limiting Constraint	Contingency	Incremental Transfer Capability (MW)
Base Case	Voltage	400	Meadow Brook 500kV bus voltage	Black Oak-Bedington 500kV Line	-
Base Case	Thermal Loading	600	Black Oak-Bedington 500kV Line	Pruntytown-Mt. Storm 500kV Line	-
Base Case	Thermal Loading	1450	Mt. Storm - Doubs 500 kV Line	Greenland Gap - Meadow Brook 500 kV Line	
Phase I	Thermal Loading	1700	Bedington-Doubs 500kV Line	Mt. Storm-Doubs 500kV Line	1300
Phase I	Thermal Loading	4100	Lexington-Dooms 500kV Line	Bath Co-Valley 500kV Line	3700
Phase II	Thermal Loading	4150	Lexington-Dooms 500kV Line	Bath Co-Valley 500kV Line	3750
Phase II	Thermal Loading	5200	Pruntytown - Mt. Storm 500 kV Line	502 Station - Mt. Storm 500 kV Line	4800
Phase III	Thermal Loading	4200	Lexington-Dooms 500kV Line	Bath Co-Valley 500kV Line	3800
Phase III	Thermal Loading	5200	Pruntytown - Mt. Storm 500 kV Line	502 Station - Mt. Storm 500 kV Line	4800

Table 1
Summary of AP Analysis Results



As part of this study, AP reviewed the impact of the Project on facilities known to be highly congested in the AP Zone. Congested facilities in the AP zone are:

- Black Oak – Bedington 500 kV Line (Voltage)
- Wylie Ridge Substation
- Kammer Substation
- Mt. Storm – Doubs 500 kV Line
- Fort Martin – Pruntytown 500 kV Line
- Black Oak – Bedington 500 kV Line (thermal)
- Doubs Substation

The Black Oak – Bedington 500 kV Line (voltage) as well as Wylie Ridge, Kammer, and Doubs Substations congestion issues have been addressed by the facility additions listed on page 9. Table 2 lists the impact of all three phases of the Project on the remaining congested facilities.

Congestion Area	4-Hour	Line Loading (% 4-Hour Rating)		Contingency
	Rating	2010 RTEP	With Trans-Allegheny Interstate Line	
Black Oak - Bedington 500 kV	2744	97.9	70.9	Pruntytown - Mt. Storm 500 kV
Mt. Storm - Doubs 500 kV	2598	94.1	76.1	Mt. Storm - Greenland Gap 500 kV
Mt. Storm - Doubs 500 kV	2598	94.1	76.1	Greenland Gap - Meadow Brook 500 kV
Mt. Storm - Doubs 500 kV	2598	92.0	72.0	Black Oak - Bedington 500 kV
Fort Martin - Pruntytown 500 kV	2434	87.1	67.7	Harrison - Pruntytown 500 kV
Pruntytown - Mt. Storm 500 kV	3326	89.8	67.5	Black Oak - Bedington 500 kV

Table 2
AP Congested Facilities

IV. Project Details

The following are technical details associated with construction of the Project:

A. Line Construction Details

Line construction may use 765 kV construction standards on 200-foot right-of-way.

Phase I: 502 Junction-Mt. Storm-Bedington -160 miles

Phase II: Bedington-Kempton - 70 miles

Phase III: Wylie Ridge-Prexy-502 Junction - 100 miles

Total: 330 miles

Line impedance per mile used in the study:

$$R = 0.000008 \quad X = 0.000202 \quad BC = 0.021326$$

(Values in per unit at 500 kV on a 100 MVA base)

Line terminals were chosen to:

- ◆ Maximize west-to-east transfer capability through the AP Zone.
- ◆ Reduce loading on highly congested facilities.
- ◆ Address system stability issues due to generation pockets.

B. Phase I Substation Details

502 Junction Substation (Proposed)

Facilities to be constructed:

- Establish 2-500 kV buses
- Add 10-500 kV breakers
- Add 5-500 kV line terminals

The new substation will be located near 502 Junction. The three terminal Kammer-Ft. Martin-Harrison 500 kV Line will be split into three line sections. The Kammer, Harrison, Ft. Martin, and Mt. Storm line terminals will be added in Phase I and the Prexy line terminal will be added in Phase III.

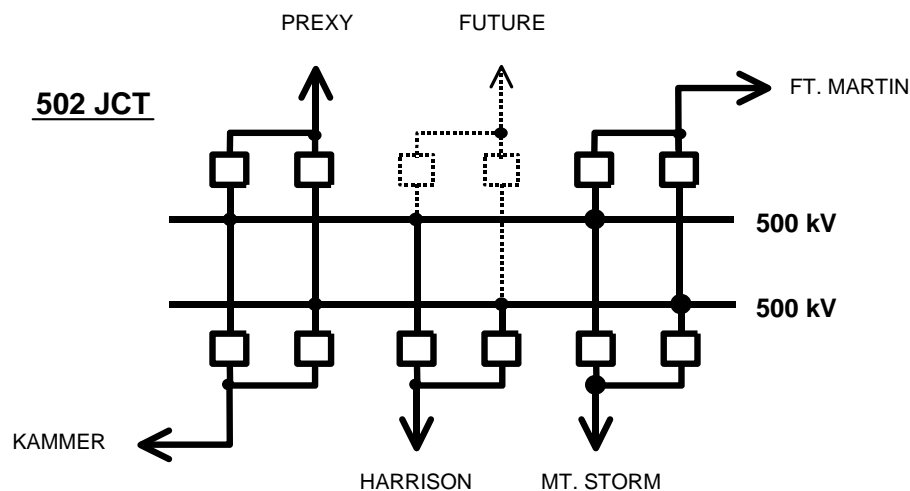


Figure 2
Proposed Facilities for
502 Junction Substation

Mt. Storm Substation

Facilities to be constructed :

- Extend 2-500 kV buses
- Add 4-500 kV breakers
- Add 2-500 kV line terminals

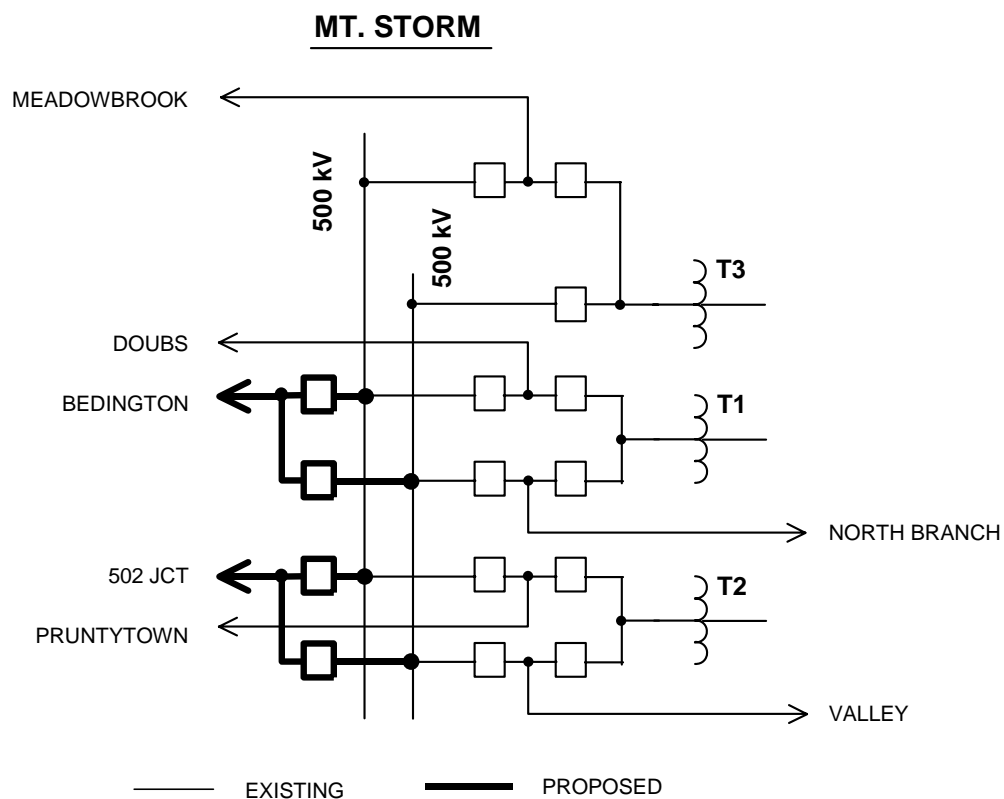


Figure 3
Proposed Facilities for
Mt Storm Substation

Meadow Brook Substation

Facilities to be added:

- Add 1-500 kV breaker
- Install an SVC of approximately +500 MVAR

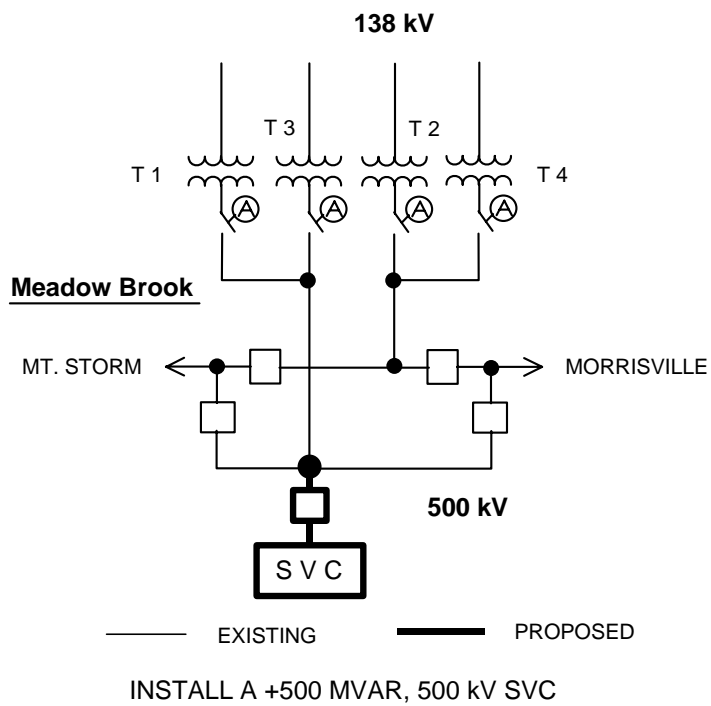


Figure 4
Proposed Facilities for
Meadow Brook Substation

Bedington Substation

Facilities to be added:

- Extend 2-500 kV buses
- Add 5-500 kV breakers
- Add 2-500 kV line terminals

The Mt. Storm line terminal will be added in Phase I and the Kemptown line terminal will be added in Phase II.

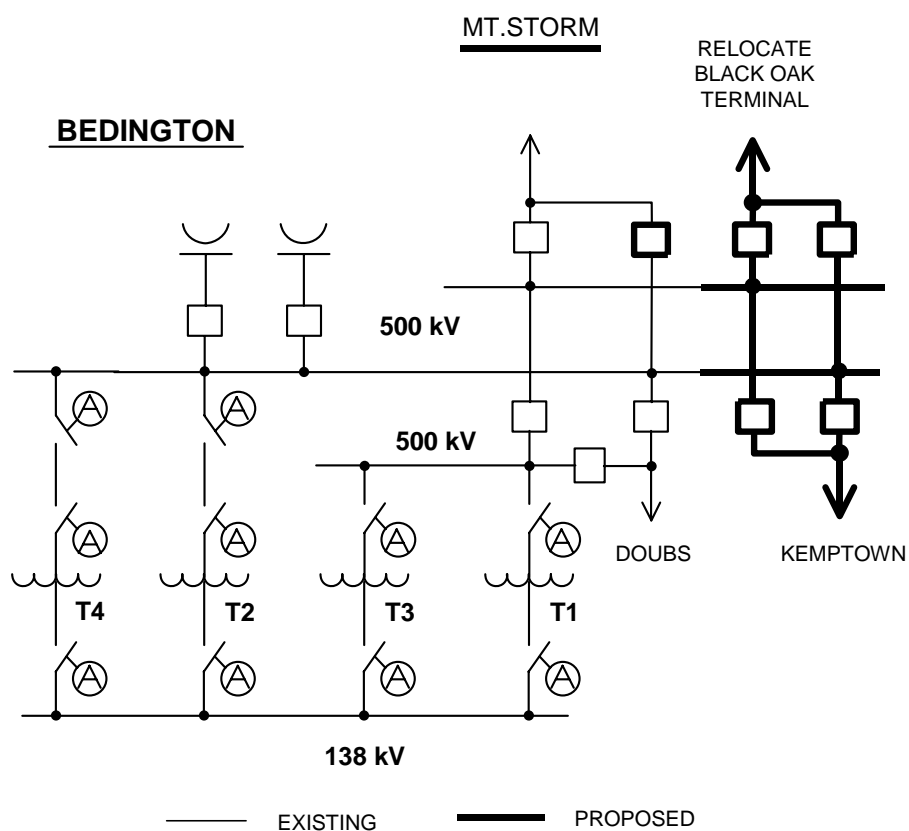


Figure 5
Proposed Facilities for
Bedington Substation

C. Phase II Substation Details

Kempton Substation (Proposed)

Facilities to be added:

- Establish 2-500 kV buses
- Add 10-500 kV breakers
- Add 5-500 kV line terminals

The new substation will be located near Kempton. The Doubs – Brighton and Brighton – Conastone 500kV Lines will be split and routed through Kempton.

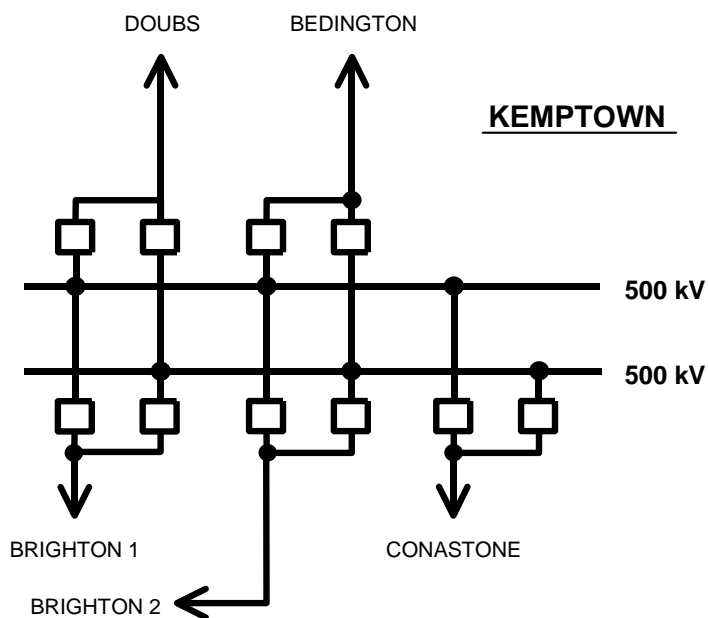


Figure 6
Proposed Facilities for
Kempton Substation

Prexy Substation

Facilities to be added:

- Establish 2-500 kV buses
- Add 4-500 kV breakers
- Add 2-500 kV line terminals

500/138 kV transformers will be added at Prexy to prevent system overloads and support system voltages in the area.

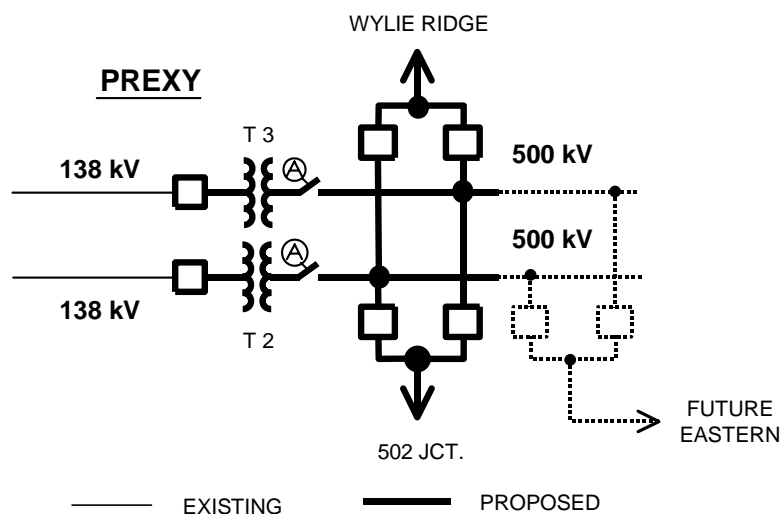


Figure 8
Proposed Facilities for
Prexy Substation

V. Project Siting

AP must obtain a Certificate of Public Convenience and Necessity from each of the states in which the Trans-Allegheny Interstate Line Project will be constructed. When obtaining the necessary governmental authorizations to site and construct the Project, AP is committed to working with land owners, neighboring residents and business owners, and regulators to balance all interests in an effort to minimize environmental and land use impacts. In addition, while the Energy Policy Act of 2005 provides FERC with “backstop” transmission siting authority, AP believes the Project is capable of receiving state siting authorization without the need to resort to FERC for such authority.

Some of the issues to be considered and evaluated by AP during the route selection process are:

1. Geography
 - ◆ Population and population centers,
 - ◆ Physiography and soils,
 - ◆ Drainage, and
 - ◆ Scenic rivers and waterways.
2. Land Use
 - ◆ Agricultural security areas,
 - ◆ Cultural features,
 - ◆ Religious facilities,
 - ◆ Schools,
 - ◆ Archaeological sites,
 - ◆ Historic sites,
 - ◆ Recreational sites,
 - ◆ Hospitals,
 - ◆ Commercial and industrial facilities,
 - ◆ Transportation corridors, and
 - ◆ Airports.
3. Threatened and endangered species
 - ◆ Wildlife species, and
 - ◆ Plant species.
4. Wetlands

To the extent possible, AP will mitigate the impact of Project siting during the siting and design phases of developing the Project.

VI. Project Cost and Timeline

The following cost estimates are based on the conceptual outline of the Project since a number of variables and assumptions will continue to be addressed.

A. Project Costs

Phase I

502 Junction – Mt. Storm 160 miles of line construction:
– Bedington

Line siting and certification, rights-of-way, material and construction	- line total	\$575,000,000
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502 Junction Substation:	Station equipment, construction	\$ 50,000,000
Mt Storm Substation:	Station equipment, construction	\$ 25,000,000
Meadow Brook Substation:	Station equipment, construction	\$ 30,000,000
Bedington Substation:	Station equipment, construction	\$ 25,000,000

Phase I Total	\$705,000,000
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Phase II

Bedington – Kemptown 70 miles of line construction:

Line Siting and certification, rights-of-way, material and construction	- line total	\$300,000,000
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Bedington Substation:	Station equipment, construction	\$ 25,000,000
Kemptown Substation:	Station equipment, construction	\$ 50,000,000

Phase II Total	\$375,000,000
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Phase III

Wylie Ridge – Prexy 100 miles of line construction:
– 502 Junction

Siting and certification, rights-of-way, material and construction	- line total	\$300,000,000
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Wylie Ridge Substation:	Station equipment, construction	\$ 10,000,000
Prexy Station:	Station equipment, construction	\$ 10,000,000

Phase III Total	\$320,000,000
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Total Project Costs

Line construction	330 miles	\$1,175,000,000
Substation construction	Modifications to 7 substations	\$225,000,000

Project Total	\$1,400,000,000
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B. Project Timeline

This schedule is preliminary in nature and as further refinements of the Project are made, items may be accelerated or delayed to best meet Project goals. The Project will be constructed in three phases. The phases will be overlapping and not sequential. Each phase is expected to require seven years to complete. The first three years will consist primarily of line siting and certification activities. The fourth year will involve the commencement of detailed engineering and right-of-way acquisition. In the fourth year of each phase, substation and line work will begin, predominantly with final engineering and equipment ordering. Permitting activities will begin in this timeframe as well. The construction of the substation and line facilities will commence and continue during the fifth and sixth years with all facilities for the phase completed in the seventh year.

AP expects that all phases will begin in approximately the same timeframe with each phase being completed independently without the necessity of completing the phases sequentially. Assuming an initial commencement of work in 2007, the following dates are projected for the proposed facilities indicated for each of the phases:



Phase I - 502 Junction-Mt. Storm-Bedington and Meadow Brook SVC

Line construction – 160 Miles: Project start – 2007; project completion - 2013

502 Junction Substation: Project start – 2007; project completion - 2010

Mt. Storm Substation: Project start – 2007; project completion - 2013

Meadow Brook Substation: Project start – 2011; project completion - 2013

Bedington Substation: Project start – 2007; project completion - 2013

Phase II - Bedington – Kemptown

Line construction – 70 Miles: Project start – 2007; project completion - 2013

Bedington Substation: Project start – 2007; project completion - 2013

Kemptown Substation: Project start – 2007; project completion - 2013

Phase III - Wylie Ridge – Prexy – 502 Junction

Line construction – 100 Miles: Project start – 2007; project completion - 2013

Wylie Ridge Substation: Project start – 2012; project completion - 2013

Prexy Substation: Project start – 2007; project completion - 2010

VII. Conclusions

The numerous studies conducted by AP since May 2005 indicate that construction of the Project in the AP Zone as described in this Proposal is needed to provide an effective realization of the Project Mountaineer concept. The Trans-Allegheny Interstate Line will increase total west-to-east transfer capability by 3800 MW and will make effective use of existing facilities and rights-of-way. The line can be routed through developing load centers and areas of anticipated generation retirement to allow not only increased system transfers but also provide for local area reinforcement. Full implementation of the Project can be completed over a seven-year period and in-service during 2013.

As a comparison, supplementary analyses indicate that the Project's system reinforcement performed comparably to the recently proposed AEP Interstate Project reinforcements when tested under system conditions and outage contingencies in the AP study. With other system reinforcements within PJM other than the Project and the AEP Interstate Project, greater increases in total transfer capability could be realized.

This Proposal is an effective solution for addressing the long-term reliability issues and economic constraints in the PJM Region. AP requests that PJM include this Project in the RTEP.

Attachment B

